

## RFA Summary

EPA Region 5 Records Ctr.

Sherwin-Williams/PMC Specialties  
Chicago, IL  
ILD 005 456 439/ILD 981 091 291



355888

January, 1989

Robert A. Fuhrer

### I. Introduction

A RCRA Facility Assessment (RFA) was completed by the United States Environmental Protection Agency (U.S. EPA) for Sherwin-Williams (SW) and PMC Specialties (PMC) sites in Chicago, Illinois. The main objective of the RFA was to determine whether there is sufficient evidence of a release of hazardous waste or hazardous constituents to require SW and PMC to undertake additional investigations to characterize the nature, extent, and rate of migration of the contaminant releases of concern. With information gained from the investigation, appropriate corrective measures can then be undertaken. The reasoning for additional investigations is to protect human health and the environment.

### II. General

SW manufactures paints and coatings including water based and solvent based products. The facility began operations in 1884, making paints varnishes, lacquers, white lead, dry color, DDT, and 2-4-D. Metal containers were also manufactured there, along with a lithographic operation. In 1911, productions expanded. The site area is approximately 122.8 acres in size and the two facilities employ around 1300 people.

The chemical production division was sold to PMC, on June 30, 1985. PMC continued with the production of organic chemicals and pigments. Many resin intermediaries are also produced here. The organic chemicals and coating manufacturing operation was built in the 1970's.

SW originally submitted its Part A Permit on November 19, 1980, as a Protective/Precautionary Filer. After the sale of the chemical division to PMC, a revised Part A Application was submitted by both SW and PMC on June 13, 1985. On August 30, 1985, SW and PMC submitted a joint withdrawal request to U.S. EPA, Region V.

Before the sale, SW had an Illinois Environmental Protection Agency (IEPA) water permit to operate a pre-treatment plant of which the two (2) surface impoundments ("ponds") were a part. After the sale to PMC, SW retained possession of the ponds, and PMC purchased the powerhouse plant.

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The sewage system on-site included one line that carried the surface drainage and sanitary sewage, and another line that moved the process wastewater, with minor discharges to the 115th and 116th sewer systems. All the wastewater combined in Kensington Avenue. The sewer system is presently divided between PMC and SW. PMC built two pH neutralization pre-treatment tanks and no longer uses SW retention ponds. SW placed some new sewer lines and placed a sump pump in operation from the east pond so SW could by-pass PMC's property. The two clay-lined settling ponds (with concrete rubble for erosion protection and neutralization), built in 1973, collect process waste water, surface runoff and sewage, and hold up to 1,500,000 gallons.

In 1975, 15 pounds of mercury (Hg) was put into use on the site. A permit was given to SW allowing for a discharge of Hg. Approximately 1.4 pounds over 4 months was discharged.

A CERCLA Site Investigation was conducted by Ecology and Environment on May 1, 1986. No sampling of soil, groundwater, or waste was performed, but photographs were taken. There was a review of the six (6) Subpart F groundwater monitoring wells that surrounded the two surface impoundments. These wells were sampled from 11/82 through 3/83.

In the southeast portion of the site, there is a 20-25 acre landfill that was capped in 1980 with a soil/sludge. Dates of waste handling reported were from 1916 to 1972. Waste types handled included organics, inorganics, solvents, pesticides, heavy metals and solid fill. Unauthorized dumping occurred until a fence was put up. There was also landfilling of waste piles and drums. Known sources of material were from chemical, paint, varnish, and lacquer manufacturing. In the southwest portion of the site there is a smaller fill area that is believed to contain only building debris (See Attachments).

SW has demolished several buildings and pieces of equipment without first submitting closure plans. They were cited by U.S. EPA for not submitting financial assurance and closure plan data and fined \$8,000.00 by a Consent Agreement and Final Order (CAFO) on December 19, 1984.

SW submitted an "after-the-fact" closure plan for treatment tanks and demolition of building 515. PMC is currently undergoing closure after IEPA inspectors discovered storage of waste solvents for more than 90 days, in building 526 (S01).

### III. Location

SW is located in Chicago, Illinois, and bordered on the north by 115th Street, on the east by Frontage Road and the Calumet Expressway, on the south by 119th Street (and Inland Metals), and on the west by Cottage Grove Avenue. Lake Calumet is approximately 300 feet to the east. The Pullman Village, a National Historic Site is to the north with residential areas to the north and west. The nearest residence is 600 feet away from the site. The area is zoned for manufacturing. The

southeast side of Chicago, sometimes referred to as the Lake Calumet region, is one of the heaviest industrialized regions in the United States (Attachments).

#### IV. Geologic and Hydrologic Setting

The Lake Calumet region is known physiographically as the Chicago Lake Plain, which at one time was the bottom of Glacial Lake Chicago. Prior to Lake Chicago, unconsolidated tills from the Wisconsin Glaciation were deposited. Lake Calumet once covered an area of approximately 3 1/3 square miles, but due to channel cutting, filling of the land by local industries, and drainage and filling of the swamplands, it is at its (much smaller) present extent.

The soil logs from the west side of the SW site, indicate that the top 3-7 feet of the subsurface is made up of cinders, topsoil, brick, slag, foundry sand, and clay fill. The next 4-11 feet are made up of mostly of brown silty clay. Gray silty clay with traces of gravel, sand, and shale go down at least 50 feet more. This gray silty clay is believed to be part of the Wadsworth Till Member of the Wendron Formation. In the northeast portion of the site (owned by PMC), the fill is from 6 to 17 feet deep and includes "chemical refuse", cinder, slag, gravel, concrete, topsoil, sand, brick, and clay. The silty brown clay is from 1 to 7 1/2 feet thick below the fill with the gray silty clay (Till) underlying this with a thickness of at least 20 feet. The artificial fill ranges (on average) from 4 to 32 feet in thickness in the area. The Bedrock is a Silurian dolomitic limestone and can be from 0 to 130 feet in depth in the area.

The SW site is above the 100-year floodplain. The area is relatively flat with variations not exceeding five (5) feet.

The depth to the groundwater is from 3 to 6 feet approximating Lake Calumet's surface level. The groundwater gradient from SW is toward Lake Calumet. Public use water is from Lake Michigan and serviced by the Chicago Water Works. The region's groundwater is unfit for drinking use and therefore not used.

#### V. Waste Characterization

##### **PMC**

The chemicals made include:

1. Paracresol (sulfonation process where toluene is the raw material);
2. Paracresol is nitrated by mononitroparacresol (MNPC), and 2, 6 di-NPC;
3. IPN-isophthalonitrile is produced through catalytic oxidation (with ammonia) of m-xylene;
4. Spirit Blue pigment (solvent blue 23) uses raw aniline;
5. Alkali Blue;

6. Tobias acid; and
7. Di- and meta-nitroparacresol.

The production of nitriles is usually with HCN. O-dichlorobenzene was used in 1977-78. There are three (3) carbon towers that are used to recover paracresol in the plant effluent.

Some of the raw materials PMC uses include: for paracresol; SO<sub>2</sub>, SO<sub>3</sub>, toluene, anhydrous ammonia, sulfuric acid, acetic acid, nitric acid, MNPC, paracresol, and orthocresol; and for Alkali Blue: blue oil, red oil, HCl, aniline, nitric acid, sulfuric acid, aqueous ammonia, formaldehyde, and di-ethylene glycol.

### Sherwin-Williams

SW generates waste from the following areas: Paint Plant - process waste water from washing of latex from mixing tanks; Emulsion tank - water based emulsion paint tank washing; and Resin Plant - polyester resin, xylene facilitates polymerization waste water; and raw material loading.

<u>Waste Type</u>	<u>EPA#</u>	<u>Handling Code</u>	<u>Components</u>
Wash Solvent	K078	S01	90-95% Hydrocarbons
Dust Coll Pigs	K082	S01	
Intercep Sludge	K079	S02	Mixed settled pigs
Spent Caustic	K080	S02	
Ovrstck-offspec	D001	S01	70% solids
Offspec resins	K078	S01	70-100% solids
Wash Solvent	F003	S02	H-carbons, xylene
Wash Solvent	F005	S02	Methanol etc.
Wash Solvent	D001	S01	90-95% H-Carbons
P-cresol Pitch	F004	S02, T06	

The waste stream to the isophalonitrile (IPN) process burns at 1800 degrees fahrenheit. Paracresol pitch is burned in the power house boilers.

On December 27, 1982, SW applied for a hazardous waste incinerator permit, but it was denied by the State because of insufficient information.

## VI. Specific Unit Summary

### SWMU Status

### Sherwin-Williams

1. Waste Water treatment ponds - withdrawn by IEPA, K079
2. Paint Container Storage Area - closure, K078, D001

3. Steudel Center Storage Area - withdraw, D001
4. Pre-1980 Landfill - post-closure care
5. Paint W.W. Sludge tanks - withdraw, K079
6. Paint Overstock Storage Area - closure, K078, D001
7. Paint Caustic Dip Tanks (3) - withdraw
8. Paint Dust Collection SA - withdraw
9. Resin Overstock Storage Area - closure, K079, D001
10. Resin #51 Wash solvent tanks - withdraw, F005, F003

#### PMC

11. Powerhouse and Storage Tank - closure, F003, F005, D001
12. Aniline Pitch Tank - withdraw
13. Alkali Blue Storage Drop Box - closure
14. Cresol Pitch Storage Area - closure, F004
15. IPN Incinerator & area - need more information, D003

#### VII. Withdrawal Request and Justification by SW/PMC (10/85) [and Reply] (See Attachments)

##### Sherwin-Williams

1. Waste Water Treatment Ponds (WWTP)- not used as storage facilities for hazardous wastes. Clay-lined ponds provide equalization of the plant's wastewater discharges and for settling solids. Capacity 1.2 million gallons. SW was successful in documenting that no hazardous waste was ever discharged to the ponds. [withdrawn by IEPA as of 11/12/86.]
3. Steudel Center SA- contends that unit was never regulated because it stores "characteristic-only" wastes for recycling. This unit was not regulated prior to July 5, 1985. Spent materials, no listed waste have been stored there. SW removed all hazardous waste by 10/85, and continues to accumulate hazardous material with no storage longer than 90 days. [Need documentation of recycling and that storage is no longer then 90 days and this documentation needs to be signed by the responsible Corporate Officer of the Company for withdrawal (§270.11).]

### Paint Division

2. Paint container SA- The waste managed in this unit was not regulated until after July 5, 1985. All waste remaining will be removed, and all future waste will be stored for less than 90 days. [Must submit a closure plan, including decontamination and future use because hazardous waste was stored here.]
5. Paint Wastewater Sludge Interceptor Tanks- Wastes managed do not show any hazardous characteristics or are not listed wastes. These two (2) sludge tanks in a sewer line run to the wastewater treatment ponds, located beneath the loading dock at the paint building. [Must document that sludge is not hazardous in any way and describe disposal process for withdrawal.]
6. Paint Overstock Container SA- all material stored is not a solid or hazardous waste and was incorrectly included in Part A. The material fits the description of a "Commercial Chemical Product" and as long as it's being reclaimed, it is not regulated. [Must submit a closure plan, including decontamination and future use because overstock offspec and offspec resins can be considered hazardous wastes even if reclaimed.]
7. Paint Caustic Dip Tanks (3)- Incorrectly listed on Part A, because these are process units which generate hazardous waste when solutions become spent. These steel tanks are located in paint building. The solution has a high pH and could be considered corrosive. [Should be withdrawn.]
8. Paint Dust Collector Container SA- Analytical data show this unit is not storing hazardous waste, incorrect notification. This unit is on the roof of the paint building. [Should be withdrawn.]

### Resin Division

9. Resin Overstock Container SA- All wastes from this unit were to be removed before October 5, 1985, to be recycled off site. Little or no waste is present in this unit. [Must submit a closure plan, including decontamination and future use because of presence of hazardous wastes in storage area.]
10. Resin Building #51 Wash Solvent Tank- Although this material is regulated by the U.S. EPA when it becomes a waste, the tank is actually a process tank not a waste storage tank. Four (4) tanks of wash solvent used to clean mixing tanks is stored in these tanks. The waste is not stored for more than 90 Days. [Need documentation of: when the material becomes a waste; a waste analysis; what happens to the waste; and to show storage is no longer then 90 days. This documentation needs to be signed by the responsible corporate officer of the company for withdrawal.]

## PMC Specialties

11. Powerhouse Solvent Tank- This tank was used to store hazardous waste prior to reuse (burning in a boiler), the waste never remained longer than 2 weeks. This tank is no longer used. This was wash solvent from the tank in building 51. [(This tank and the one next to it now contain paracresol pitch)]. Therefore you need documentation: to show that the material is not hazardous; to show that there is no storage longer then 90 days; this documentation needs to be signed by the responsible corporate officer; and you must submit a closure plan, including decontamination and future use, because no notification of change or proper closure was given subjecting the owner/operator to enforcement actions.]
12. Proposed Aniline Pitch tank- Never existed. Proposed storage tank in original Part A. [Should be withdrawn, with statement explaining the two (2) tanks in the area.]
14. Cresol Process Residue Container SA- The material stored is not a hazardous waste. This unit stores material prior to reprocessing. [Must submit a closure plan, including decontamination and future use because of presence of hazardous waste, or must show documentation that material is not hazardous waste, or does not exhibit hazardous characteristics. Material may be considered hazardous even if reclaimed, which would require documentation to show storage is no longer than 90 days, and this documentation needs to be signed by the Responsible Corporate Officer]
15. IPN incinerator- The waste being burned does not meet the definition of a solid waste, therefore is not regulated. In addition, this unit is permitted as an air pollution control device by IEPA. The IPN is designed to destroy hydrogen cyanide gas, as gas resulting from a chemical reaction in the production process. P063 is a noncontainerized gas and is not a solid waste. [To withdraw this unit, detailed information is required to make an intelligent decision, specific data on the "incinerator" and of the emissions is required.]

## VIII. Contamination

Spills- There was a leaking Drum in ParaCresol Pitch Drum Storage Area and a Spill of paracresol (Feb. 11, 1982) from a railroad car at the tank car unloading area. Both spills were cleaned up.

There is a potential for ground and surface water contamination affecting population and the environment. Wastes found on site are from the production of paints and coatings including both water and solvent based and resin intermediaries used in these coatings.

The review of the six (6) Subpart F wells (around the WWTP) show arsenic, cadmium, and lead near drinking water standards. 10 ppm of

phenol were found in all wells. Paint and chemicals were found at 13 feet below the surface.

A more recent sampling visit (SV) at the site included 23 soil/sludge/water samples taken on Oct. 6 and 7, 1987, by Metcalf and Eddy. The soil and surface water samples were found to contain a large array of organic compounds which are often used as solvents. Several of the compounds detected in the soil samples are often used as precursors to organic compounds. These compounds detected may have been used in the organic production.

Pesticides/PCBs, namely 4,4' DDD and 4,4' DDT were detected in the soil samples. Endosulfan was detected in surface water samples collected from the East and West ponds.

Cresol and compounds commonly used to make resin and dyes were detected in the surface water samples collected from the East and West ponds.

The presence of metals at high concentrations in the soil and surface water samples exhibit contamination. The metals which were detected at significantly high concentrations in most of the soil samples were lead, chromium, cobalt, copper, manganese, mercury, zinc, and cyanide. These metals are often ingredients in paint. Therefore, their presence in the soil and surface water may be the result of the manufacture of paint at the facility. High levels of lead were found in almost all the samples with the highest value in the water being 13,200 ug/l and the highest value in soil/sludge being 6320 ppm. In addition the highest values for mercury, cyanide, and arsenic in the soil/sludge were 5.2, 11.0, and 234 ppm, respectively. The highest values for the organics in the soil/sludge included: toluene at 11,000 ppm; ethylbenzene with 1,700 ppm; and total xylenes with 14,000 ppm.

Sampling from 1983-84 groundwater wells at the Inland Metals Site (directly South of SW/PMC) showed high levels (near drinking water standards) of lead and cadmium. Soil and water sampling at Inland Metals in August of 1987, demonstrated the presence of various organic compounds.

Hazardous wastes are burned at the PMC site with no assurance that toxic materials are not being released to the atmosphere. PMC Specialties is said to have released 1,587,293 pounds of pollutants from the burning of; coal tar crudes, dyes, and pigments in the past year.

#### IX. Future Contamination

The obviously contaminated soil and water will indefinitely contribute to the groundwater contamination in the area. The improper closure of SW pre-RCRA landfill will also continue to contribute. The surface drainage from the site will go into both the sewer system or be discharged directly into Lake Calumet via conduit. The air releases will be deposited in a much larger area contributing to Chicago's south-east sides air pollution problem. The groundwater will eventually turn



up in Lake Calumet and possibly Lake Michigan. Basically, Lake Calumet receives both the groundwater and surface water contamination from this site. This would appear to have an effect on the environment and public health in the short-term and long-term, unless there is some form of corrective action. The source of some of the surface and subsurface contamination on the south portion of the site may be from the Inland Metal site, as seen by the rust colored ditches outside of the facilities along 119th Street.

#### X. Conclusions

On October 6th and 7th, 1987 a sampling visit was conducted. On December 21, 1988, a 2nd VSI was conducted at these facilities. It was learned that the metal, lithographic, varnish, and lacquer manufacturing are no longer performed on site; and that the Alkali Blue Storage Drop Box was moved in the past year. The cresol pitch storage area now is the location of a brand new "afterburner" that may burn toluene waste and paracresol (p-cresol) waste. The p-cresol pitch is stored in the previously hazardous power house solvent tanks. Boilers may also burn p-cresol, which will be regulated in the near future.

A complete withdrawal from RCRA cannot be completed until every unit's status is completely documented and determined by IEPA. Units that are not to be used that were SWMUs must be cleaned closed or follow post-closure care. Units that will continue to be used will need a revised permit and a Part B, which should include corrective actions where needed. SW/PMC are allowed to remain in operation under interim status until November 8, 1992.

The SW property has 10 SWMUs. Six should be withdrawn from the original Part A based on their withdrawal justification alone, three should undergo closure, and one, the landfill should undergo post-closure care and monitoring. PMC Specialties has five SWMUs from their Part A. One should be withdrawn and three should undergo closure. The IPN incinerator should be investigated further along with the boilers and the afterburner to re-determine their status.

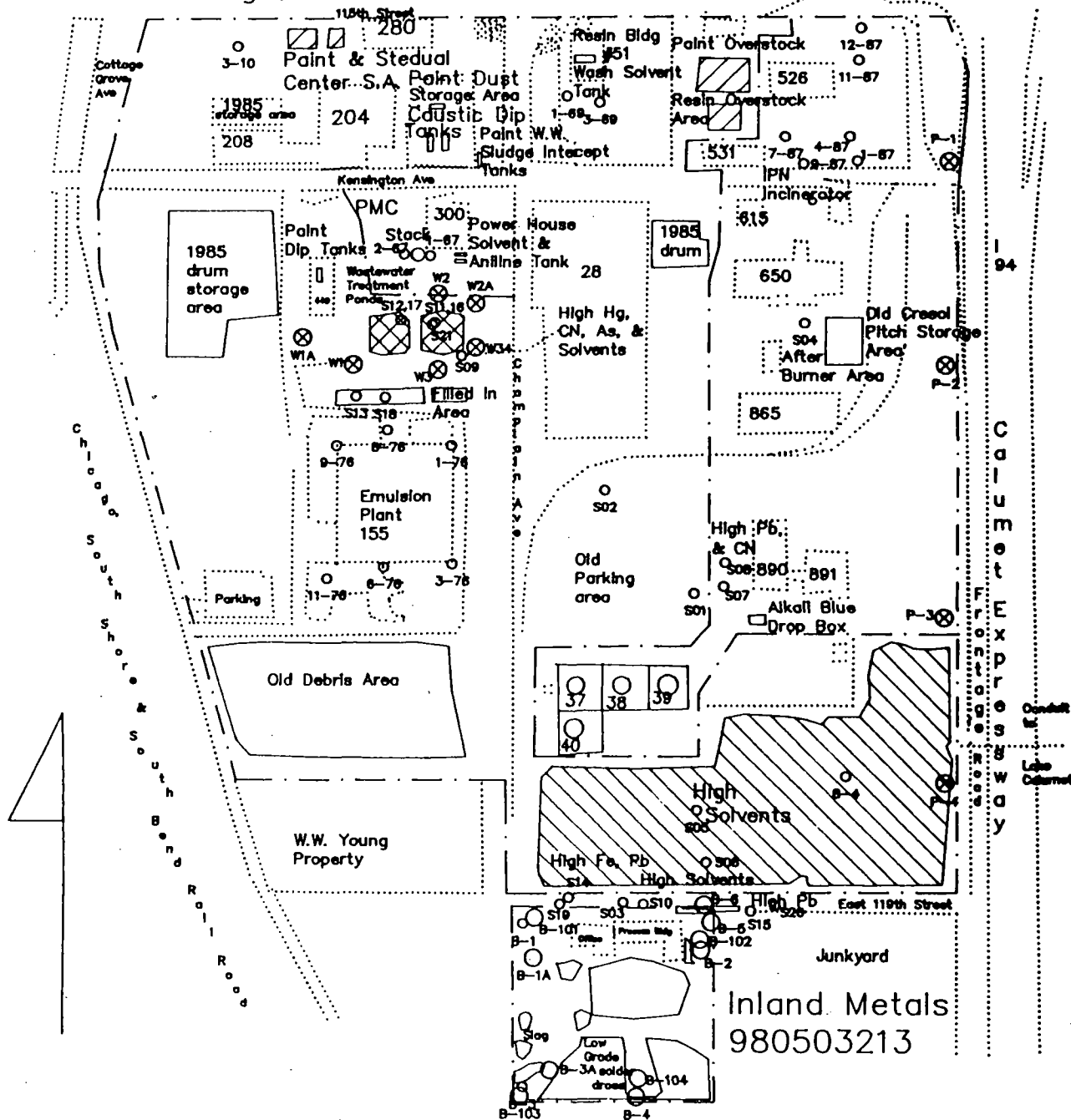
Contaminant levels on the SW/PMC site are not only above natural background levels, but above the highest background levels found anywhere in the south-east side of Chicago, demonstrating that the contamination on their site is due, primarily to their own processes.

Large quantities of toxic, caustic, and flammable materials are stored on the two sites. Contaminants from soil, groundwater, surface water and air emissions may allow for a significant impact on Lake Calumet and surrounding area and subsequently the people and wildlife living in the district.

RFA Summary Attachments  
Sherwin-Williams/PMC Specialties  
Chicago, IL  
ILD 005 456 439/ILD 981 091 291

Sherwin-Williams Company  
Chicago, IL 005456439

PMC Specialties  
981091291



Attachment 1. 1988

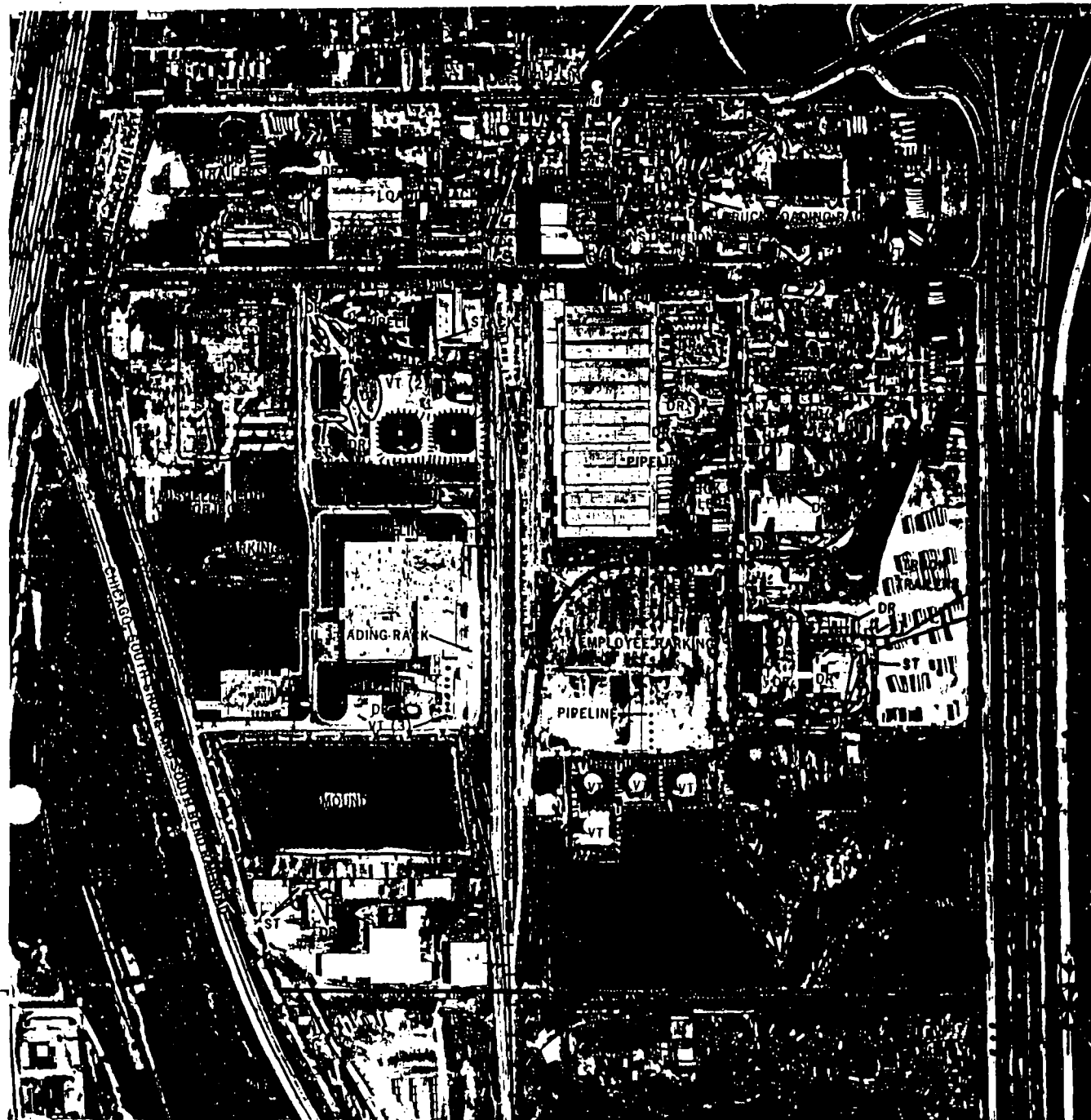


Figure Sherwin-Williams Company, June 6, 1985. Approximate scale, 355 feet.

Attachment 1a.

## INTERPRETATION CODE

### BOUNDARIES AND LIMITS

- X---X--- FENCED SITE BOUNDARY
- UNFENCED SITE BOUNDARY
- XXXXXX FENCE
- STUDY AREA

### DRAINAGE

- DRAINAGE
- FLOW DIRECTION
- INDETERMINATE DRAINAGE

### TRANSPORTATION/UTILITY

- ===== VEHICLE ACCESS
- RAILWAY

### SITE FEATURES

- DIKE
- SL STANDING LIQUID
- SL STANDING LIQUID
- EXCAVATION, PIT (EXTENSIVE)
- MOUNDED MATERIAL (EXTENSIVE)
- MM MOUNDED MATERIAL (SMALL)
- CR CRATES/BOXES
- DR DRUMS
- HT HORIZONTAL TANK
- PT PRESSURE TANK
- VT VERTICAL TANK
- CA CLEARED AREA
- DG DISTURBED GROUND
- FL FILL
- IM IMPOUNDMENT
- LG LAGOON
- OF OUTFALL
- SD SLUDGE
- ST STAIN
- SW SOLID WASTE
- TR TRENCH
- VS VEGETATION STRESS
- WD WASTE DISPOSAL AREA
- WL WETLAND



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5

230 SOUTH DEARBORN ST.  
CHICAGO, ILLINOIS 60604

**FILE COPY**

REPLY TO THE ATTENTION OF:

5HR-13

5/30/89

Mr. Larry Eastep  
IEPA- Manager LPCD, Permits  
2200 Churchill Road  
Springfield, Illinois 62706

Re: RCRA Facility Assessment (RFA)  
ILD 005 456 439/ILD 981 091 291

Dear Mr. Eastep:

Enclosed is a copy of the RCRA Facility Assessment of the Sherwin-Williams  
and PMC Specialties Companies for your files.

If you have any questions, please call 312/353-4889.

Sincerely,

A handwritten signature in cursive script that reads "Robert A. Fuhrer".

Robert A. Fuhrer

c. Cliff Gould - IEPA, Maywood  
William Muno - U.S. EPA, Chief Enforcement Branch

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